

KATHRYN M. FULLER

TITLE: Forensic Scientist 2

EDUCATION: 1998- B.A. in Chemistry. Grinnell College, Grinnell, IA
2003- Ph.D. in Chemistry. University of Minnesota, Minneapolis, MN
2003 to 2004- Post Doctoral Associate. Dept. of Biochemistry Mass Spectrometry Consortium for the Life Sciences, University of Minnesota, St. Paul, MN

PROFESSIONAL EXPERIENCE: **Forensic Scientist, Bureau of Criminal Apprehension-Toxicology Section (Dec. 2004-present)**

- Analyze biological samples for the presence of ethyl alcohol, other volatiles and drugs of abuse using HS-GC, GC-MS, HPLC, CE, and LC-MS/MS.
- Properly record and maintain physical evidence, reports and instrumentation.
- Provide expert court testimony of results of analysis.

Post Doctoral Associate, Mass Spectrometry Consortium for the Life Sciences, University of Minnesota, Dept. of Biochemistry (Jul. 2003- Dec. 2004)

- Operated triple quadrupole, quadrupole time-of-flight and ion trap mass spectrometers with LC, nanospray, ESI, GC, APCI and MALDI sources for tandem MS analysis.
- Performed liquid chromatography using the Agilent 1100 HPLC, Agilent 1100 capillary LC and LC Packings 2D capillary LC systems interfaced with mass spectrometers.
- Identified and quantitated small molecules, including drugs and their metabolites, by GCMS and LCMS.
- Developed methodology for proteomics, serum profiling and polymer analysis.
- Maintained mass spectrometers, LC and GC instrumentation and data systems.
- Analyzed mass spectrometry data using proteomics software and bioinformatics tools.
- Trained facility users in mass spectrometry experiment design, sample preparation and data analysis.

Research Assistant, University of Minnesota, Dept. of Chemistry (Sept. 1999- Jul. 2003)

- Developed capillary electrophoresis based separation and detection methods for individual organelles, proteins, nucleic acids and small molecules using home built and commercially available (Beckman P/ACE MDQ) instrumentation.

- Identified metabolites of doxorubicin, a chemotherapeutic agent, using mass spectrometry.
- Acquired extensive experience in maintaining and troubleshooting analytical instrumentation.
- Created procedures for PCR amplification and analysis of mitochondrial DNA from small collections of mitochondria (femtoliter sized samples).
- Established standard research protocols and data processing strategies.

Teaching Assistant

- General Chemistry Laboratory: University of Minnesota (1998-1999)
- Physical Chemistry and Advanced Inorganic Chemistry Laboratory: Grinnell College (1997-1998)

Research Assistant, University of Missouri-Columbia, Dept. of Chemistry (summer 1996, 1997)

- Projects included the surface analysis of thin iron films grown on germanium and the application of transition metal mediated organic reactions towards the synthesis of carbohydrates.

TRAINING: In-service training: Alcohol- BCA Laboratory
In-service training: Toxicology- BCA Laboratory

Courtroom Testimony- BCA Laboratory

Attended workshop entitled "Interpretive DUID Workshop" conducted by the SOFT Continuing Education Committee and the SOFT/AAFS Drugs and Driving Committee. May 22-24, 2007 in Albany, NY.

Attended workshop entitled "The Postmortem 'Blood Drug Screen': Analytical and Managerial Approaches" at the Society of Forensic Toxicologists 2005 Annual Meeting. October 17, 2005 in Nashville, TN.

PUBLICATIONS: Fuller KM, Arriaga EA: **Capillary electrophoresis monitors changes in the electrophoretic behavior of mitochondrial preparations.** *Journal of Chromatography B* 2004, **806**:151-159.

Fuller KM, Arriaga EA: **Analysis of individual acidic organelles by capillary electrophoresis with laser-induced fluorescence detection facilitated by the endocytosis of fluorescently labeled microspheres.** *Analytical Chemistry* 2003, **75**:2123-2130.

Fuller KM, Arriaga EA: **Advances in the analysis of single mitochondria.** *Current Opinion in Biotechnology* 2003, **14**:35-41.

Presley AD, Fuller KM, Arriaga EA: **MitoTracker Green labeling of mitochondrial proteins and their subsequent analysis by capillary electrophoresis with laser-induced fluorescence detection.** *Journal of Chromatography B* 2003, **793**:141-150.

Anderson AB, Ciriacks CM, Fuller KM, Arriaga EA: **Distribution of zeptomole-abundant doxorubicin metabolites in subcellular fractions by capillary electrophoresis with laser-induced fluorescence detection.** *Analytical Chemistry* 2003, **75**:8-15.

Fuller KM, Duffy CF, Arriaga EA: **Determination of the cardiolipin content of individual mitochondria by capillary electrophoresis with laser-induced fluorescence detection.** *Electrophoresis* 2002, **23**:1571-1576.

Duffy CF, Fuller KM, Malvey MW, O'Kennedy R, Arriaga EA: **Determination of electrophoretic mobility distributions through the analysis of individual mitochondrial events by capillary electrophoresis with laser-induced fluorescence detection.** *Analytical Chemistry* 2002, **74**:171-176.

INVITED LECTURES/ PRESENTATIONS: Fuller KM, Stoll DR, Steinkraus LD, Hardin GG, Carr PW: **Fast Gradient Elution Liquid Chromatography for Rapid Screening of Drugs of Abuse in Blood.** October 20, 2005 at the Society of Forensic Toxicologists 2005 Annual Meeting in Nashville, TN.

PROFESSIONAL AFFILIATIONS:

- Society of Forensic Toxicologists
- American Academy of Forensic Sciences (application pending)
- American Chemical Society
- Minnesota Chromatography Forum
- Minnesota Mass Spectrometry Discussion Group (MinnMass)

AWARDS:

- **Ellison Medical Foundation Fellowship** to participate in a course on molecular biology, August 2002.
- **BP Amoco Travel Grant** to attend Pittcon 2002.
- **NIH-Chemistry-Biology Interface Training Grant Recipient**, University of Minnesota, 1999-2001.
- **Grinnell College Trustees' Honor Scholar.**



MINNESOTA DEPARTMENT OF PUBLIC SAFETY

Bureau of Criminal Apprehension
Forensic Science Laboratory - St. Paul
1430 Maryland Avenue East
St. Paul, MN 55106

TEL: (651) 793-2900 TTY: (651) 282-6555 FAX: (651) 793-2901

An ASCLD/LAB-International Accredited Laboratory

To: Richfield Police Department
6700 Portland Avenue South
Richfield, MN 55423

Lab No. S10-16381

Report No. 1

Attention: Pat Moriarty

REPORT ON THE EXAMINATION OF PHYSICAL EVIDENCE

Toxicology 11/04/2010

Laboratory Number: S10-16381
Section Reporting: Toxicology
Case Type: Criminal Sexual Conduct
Principals: [REDACTED]

Requesting Agency: Richfield Police Department
Agency Case Number: 10003547
County: Hennepin
Date of Birth: [REDACTED] 1993

Description of Submitted Evidence:

Item	Type and Packaging	Kit Number	Description/Source	Date/Time Collected
1	Sealed BCA DWI urine collection kit	U178131	[REDACTED]	09/27/2010 13:30

Results of Laboratory Examination:

Analysis failed to reveal the presence of ethyl alcohol.

Pursuant to Minn. Statute 634.15, I have analyzed at the Minnesota Bureau of Criminal Apprehension Forensic Science Laboratory, using an approved gas chromatographic procedure, this sealed sample of urine identified to me as having been obtained from the above individual. I hereby certify that I am trained in the analysis and interpretation of blood and urine tests for alcohol pursuant to Minn. Rule 7502.0600 and that the above is true and accurate.

Kathryn M. Fuller

Kathryn M. Fuller, Ph.D.
Forensic Scientist

Disposition: Additional toxicology report(s) to follow.

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To: Richfield Police Department
6700 Portland Avenue South
Richfield, MN 55423

Lab No. S10-16381
Report No. 2

Attention: Pat Moriarty

REPORT ON THE EXAMINATION OF PHYSICAL EVIDENCE

Toxicology 11/08/2010

Requesting Agency: Richfield Police Department
Case Type: Criminal Sexual Conduct
Principal: [REDACTED]

Agency Case Number: 10003547
County: Hennepin
Section Reporting: Toxicology

Description of Submitted Evidence

Item	Type and Packaging	Kit Number	Description	Date/Time Collected
1	Sealed BCA DWI urine collection kit	U178131	[REDACTED]	09/27/2010 13:30

Results of Laboratory Examination

The following are presumptive screening results obtained by immunoassay:

Type of Drug:

cannabinoids
cocaine metabolite
opiates
amphetamines
phencyclidine
barbiturates
benzodiazepines
methadone
propoxyphene

Not Detected
Not Detected
Not Detected
Not Detected
Not Detected
Not Detected
Not Detected
Not Detected
Not Detected

I hereby certify that the above report is true and accurate and represents my opinions and interpretations.

Kathryn M. Fuller, Ph.D.
Forensic Scientist

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REPORT ON THE EXAMINATION OF PHYSICAL EVIDENCE

Toxicology 11/08/2010

MINNESOTA DEPARTMENT OF PUBLIC SAFETY
Bureau of Criminal Apprehension - Forensic Science Laboratory

Lab No. S10-16381
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Based on information submitted for this case, no further toxicology testing will be done at this time. Should investigations yield more details, please contact the BCA Forensic Science Laboratory to request additional toxicological testing.

For drug scheduling information, visit www.bca.state.mn.us/Lab/Documents/Lab-Intro.html

Disposition: This evidence is being returned to your agency by delivery service.

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